PLANT PROTECTION BULLETIN

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FAO PLANT PROTECTION BULLETIN

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PROBLEMS OF ANIMAL FEEDING IN EUROPE

This study, the latest issue (No. 51) in the FAO Agricultural Development Paper series, has been compiled from papers and country reports submitted to the Technical Meeting on Problems of Animal Feeding in Europe, held in Paris in March 1953 under the joint auspices of FAO and the European Association for Animal Production.

The editors, in selecting and arranging their material, have been concerned, in particular, to focus attention on those problems confronting the European farmer as a result of the recent trend towards the widespread use of home-grown feedingstuffs.

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FAO Plant Protection Bulletin

VOL. III, No. 11 A Publication of the AUGUST 1955

World Reporting Service on Plant Diseases and Pests

Effect of Rainfall on the Incidence of Monilia Pod Rot of Cacao in Ecuador [1]

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MONILIA pod rot of cacao, caused by *Monilia roreri* Ciferri & Parodi, was found in 1914 for the first time in the vicinity of the city of Quevedo, Ecuador [2], and was first described in 1918 by Rorer [3]. It was at one time known by the name of "Quevedo disease" after the locality where it had been found. This disease now causes heavy annual losses in all parts of Ecuador where cacao is grown, and it is most severe in the areas of heavier rainfall close to the foothills of the Andes mountains. The disease has also spread to neighboring Colombia.

An interesting characteristic of the disease is the appearance of spots of mature coloration on the surfaces of pods which are not yet mature and which do not demonstrate external lesions indicative of the disease. This discoloration indicates the presence of an internal infection and the colored areas later turn brown and display the more characteristic symptoms by which the disease is commonly recognized in the field. This early symptom of the disease, usually referred to as "premature ripening," makes it possible to identify pods which, although apparently healthy, may display an advanced state of internal decomposition. The brown surface lesion can spread to cover a large part of the pod's surface and later may become covered with a layer of white mycelium of the fungus on which the cream-colored or tan spores appear. The amount of damage caused to the seeds may vary considerably, but the seeds are often completely destroyed by a watery rot which has given the disease the name "watery pod rot" or, in Spanish, podredumbre acuosa.

As the fungus can be found in the pods long before the appearance of any external symptoms of the disease, infection probably takes place during the period of flowering or during very early stages in the growth of the pod. Rorer [4] commented on this fact and Briton-Jones [5] stated that infection took place during the early growth. Extensive inoculation experiments were carried out at the Tropical Experiment Station, Pichilingue, and although the data were insufficient for statistical analysis, it was observed that many pods inoculated in the flower or at a very early stage of development died of

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[1] A contribution of the Tropical Experiment Station, Pichilingue, Ecuador, Servicio Cooperativo Interamericano de Agricultura, jointly operated by the U. S. Foreign Operations Administration and the Dirección Técnica de Agricultura of the Ministerio de Economia of Ecuador.

[2] Fowler, R. L. and Gustavo H. Lopez. 1949. The cacao industry of Ecuador. U. S. Dept. Agr. Foreign Agr. Rept. 34.

[3] Rorer, J. B. 1918. Enfermedades y plagas del cacao en el Ecuador y métodos modernos apropiados al cultivo del cacao. Quinta Normal, Ambato, Ecuador.

[4] *Loc. cit.*

[5] Briton-Jones, H. R. 1934. The diseases and curing of cacao. Macmillan & Co., Ltd,. London.

Monilia before reaching maturity. Attempts to inoculate mature or nearly mature pods failed.

Relationship Between Rainfall and Disease Incidence

Records of the incidence of pod diseases occurring on the crop harvested weekly from a plot of 147 Trinitario cacao trees at the Tropical Experiment Station show an interesting relationship between the incidence of Monilia pod rot and rainfall. There is a positive correlation with the rainfall occurring in the fourth preceding month, but none with the rainfall occurring whilst the crop is harvested. The period between pollination and maturity of the fruit is variable in cacao of hybrid origin such as these Trinitario trees, but five months can be considered an average figure. Since pods displaying visible symptoms of *Monilia* infection were likely to be harvested somewhat earlier than healthy pods of the same age, it appears that the amount of rain falling during the period of flowering and early fruit set has an extremely important bearing on the amount of Monilia pod rot which will occur in the crop about four months later.

The relationship is illustrated in Figure 1, in which the percentage of pods infected with *Monilia* per month is plotted with the monthly rainfall in inches occurring in the fourth preceding month. Pods dying of physiological wilt and early *Marasmius* infection (chirimoya pods), which are collected long before maturing, are excluded.

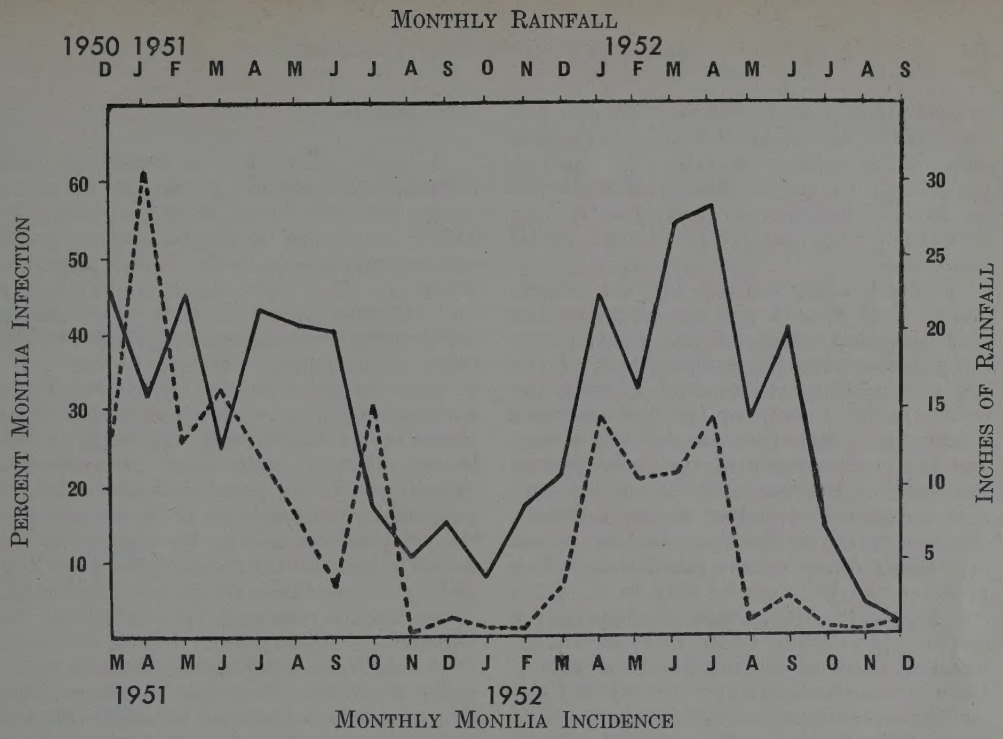
A remarkably close correlation is seen to exist during all four years. In 1951 some discrepancies occur, notably the fact that a precipitation of more than 15 inches of rain during July was not accompanied by a correspondingly high incidence of *Monilia* in October. This July rainfall was unusually high, as normal rainfall for that month is measured in tenths of inches rather than in inches. In this instance, most of the rain fell between the seventh and the seventeenth of the month and only 0.05 inches fell after the seventeenth. Since the dry season had by then already been well established before this unusual rainy spell and since this was followed immediately by a prolonged period of completely dry weather, it is reasonable to suppose that the rains were too concentrated and brief to produce their maximum effect on the incidence of *Monilia*. It is possible, however, that the July rainfall may have induced a somewhat greater incidence of *Monilia* during October than might have otherwise occurred.

An excessive flooding rain may possibly have a depressing effect on incidence of the disease as is suggested by the drop of the incidence of *Monilia* in April 1951 in relation to more than 30 inches of rain in January and to a similar drop in incidence of *Monilia* in June of the same year corresponding with rainfall of over 15 inches in March. It can be seen, however, that in 1953, a year of heavy rainfall, there is quite a close relationship between the curves for rainfall and *Monilia* in spite of the heavy monthly rainfall figures. The years of light rainfall, 1952 and 1954, show remarkably close correlation between rainfall and incidence of *Monilia*.

An interesting phenomenon, as shown in Table 1, is the alternation of years of heavy and light rainfall and this is reflected

TABLE 1. – *Relationship between annual rainfall and incidence of Monilia pod rot, based on records taken in a plot of 147 Trinitario cacao trees, Pichilingue, Ecuador, 1951–1954*

Year	Amount of rainfall, in inches	Number healthy pods	Number infected pods	Percent infected pods
1951	107.26	1,790 (Mar-Dec)	587 (Mar-Dec)	32.79 (Mar-Dec)
1952	58.31	1,959	461	23.53
1953	119.66	1,668	504	30.22
1954 (Jan.–Nov.)	57.72	1,227	210	17.11



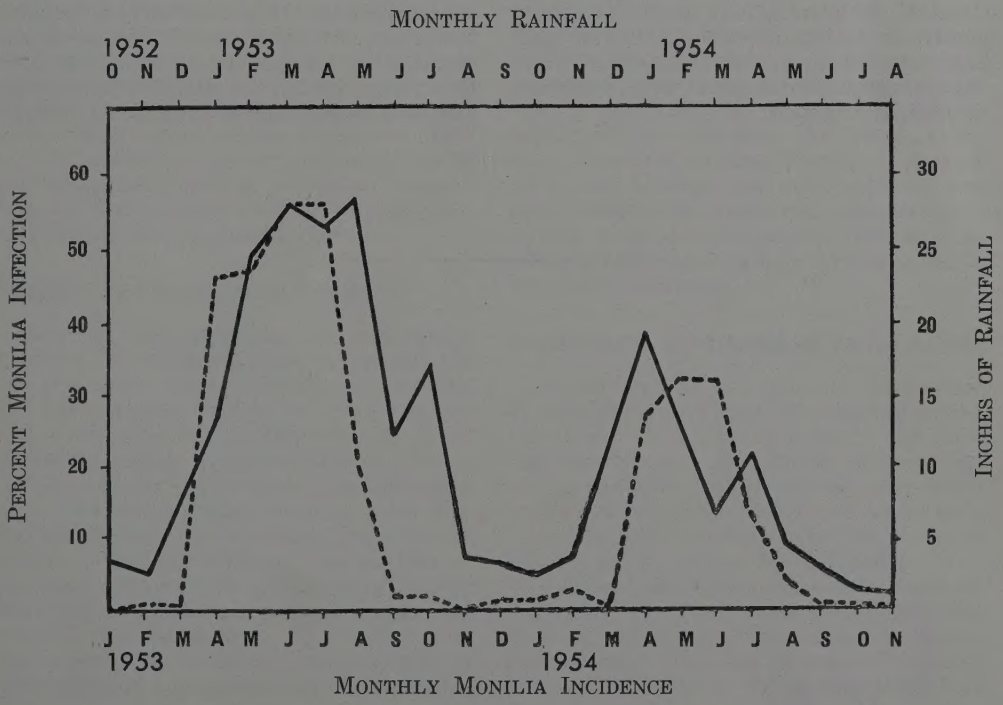


Figure 1. Relationship between incidence of Monilia pod rot of cacao and amount of rainfall during early stages of pod formation, based on records taken in a plot of 147 Trinitario cacao trees, Pichilinaue, Ecuador, 1951-54.

in heavy and light incidence of Monilia pod rot. With the accumulation of sufficient data of this kind, it might be possible to predict, in general terms, the amount of *Monilia* infection in any year in any area from the amount of rainfall to be expected.

Figure 1 clearly indicates that the greatest incidence of Monilia pod rot occurs on the crop harvested during the latter part of the rainy season and the early months of the dry season, March to September, while the lowest incidence occurs on the crop harvested during the latter part of the dry season and the early months of the rainy season, October to February. It is unfortunate that the period of highest disease incidence coincides with the heaviest harvest period of the seedling cacao population which produces the bulk of the crop in Ecuador, i. e. March to July. This is due to the fact that the seedling Cacao Nacional population still produces a relatively large part of the crop in the country. Trinitario trees, on the other hand, are variable in their periods of flowering and fruit setting and a stand of such trees may be picked continuously, as is illustrated by the plot used in the experiment under discussion, in which harvesting was carried out at weekly intervals throughout the year.

Conclusions

A close relationship is shown to exist between the amount of rainfall occurring during the early stages of the pod formation and the incidence of Monilia pod rot found subsequently on the pods as they approach maturity. This lends support to the theory that *Monilia* infection takes place during the period of flowering and very early development of the pods.

This information can have a very important bearing on the development of control measures for the disease, especially in the timing of the applications of protective fungicides. It is possible that protective fungicidal sprays applied at the beginning of the rainy season and continuing during the period of heaviest fruit set will effectively control the disease during the period of peak yield.

A second possibility is related to the selection of clonal varieties for the avoidance of serious *Monilia* infection. Trinitario cacao, which is the source of most clonal varieties, is exceedingly variable in all characteristics, including duration of the harvest period and time of fruit set. It is therefore quite possible that selections can be made from segregates of the Trinitario population which will form their crop during the period when serious infection with Monilia pod rot does not occur.

Danish Pesticide Regulations

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THE remarkable development of a wide range of synthetic pesticides in recent years has greatly enhanced the efficiency of pest control, but has also created new problems. Many of these newer and potent pesticides are highly toxic to warm-blooded animals, and their introduction has stressed the need for the utmost caution in avoiding harmful effects on man and livestock. To this end, many governments have adopted legislation to regulate the marketing of pesticides for the purpose of preventing hazards without, at the same time, hindering progress in pest control.

In Denmark an *ad hoc* commission has recently examined problems relating to pesticides and has revised the relevant regulations. As a result, practically all the responsibilities for the supervision of pesticides have been transferred, under the power of the three supplementary Acts which were issued on 13 April 1954, from the Public Health Service of the Home Office to the Ministry of Agriculture, which was formerly responsible only for the efficiency side of pesticides. Regulations of 1 November 1954 and explanatory circulars cover the present status.

Testing of Commercial Products

Testing and approval of commercial products is voluntary, and is carried out by the three state laboratories, namely, the Experimental Station for Plant Diseases and Pests, the Danish Institute for Weed Research, and the Government Pest Infestation Laboratory. Conditions are laid down in a standard contract, stating, *inter alia*, the use of test results in trade negotiations and in public advertising. Annual lists of approved products are published, excluding those which, although promising, are not available on the market. The cost of testing is partly borne by the State, partly by the proprietor. A special duty on the annual sale, levied on the importer or manufacturer, covers the costs for periodical re-testing of approved products to ensure that they are not deteriorating.

Since the adoption of uniform procedures by neighbouring countries would facilitate trade and supervision, services in Denmark, Finland, Norway and Sweden keep in close touch and meet annually to discuss methods and results of the testing of pesticides.

Research and Advisory Activities

Research and advisory work on pesticides is referred to the laboratories mentioned above and, for questions relating to public health and toxic effects, to the Poison Panel of the Ministry of Agriculture. For the simplification of advisory work it is obligatory to use a number of agreed names of pesticides. For many products an explanation of the chemical nature is given on labels, directly following the brand name, e. g. "Kartovit, a copper fungicide". Agricultural and horticultural organizations carry out a considerable number of demonstrations on the methods of applying pesticides, an activity undertaken largely by two national pesticide committees.

Supervision of Chemical Composition

Supervision of the chemical composition of pesticides is the task of a special service, known as "Kemikaliekontrollen." This service started as a department of the Plant Diseases Station, but is now an independent institution under the Ministry of Agriculture. It is financially supported by the duty on sales of pesticides mentioned before.

All pesticides offered for sale in Denmark must be registered with the Supervision Service, specifying composition according to elaborate rules and giving, if required, methods of analysis; the Service itself may

work out such methods. Notification of any future change in composition must be given. A list of registered preparations is not published.

The Service selects samples from both retail stores and wholesale stocks. Samples are submitted to chemical analysis or, if necessary, to biological tests. Advertising and labelling is regulated not only by the general Act requiring fair recommendations in advertisements, but also by special rules in the pesticide regulations. The Service checks on labels and also on advertisements appearing in journals, pamphlets and circulars.

Certain bulk chemicals such as sulphur and copper sulphate, and some standard chemicals sold under chemists' regulations, are generally exempted from the labelling rules, if of standard purity. Impure chemicals for soil treatment may be sold with a special label. Borax, sulphate of manganese and other minor elements are subject to the fertilizer rules. Products claiming to act both as fertilizer and pesticide may only be sold with special permission. Preparations for accelerating or retarding the sprouting of potatoes, fruit fall etc., do not come under the pesticide regulations unless the Ministry of Agriculture so decides.

Before distributing a pesticide, a firm may ask the Service to analyse individual batches of the pesticide. The Service may carry out such prior-to-marketing analyses when its other duties permit, and the fees are 50 percent higher than those of private chemical laboratories.

In cases of serious infringement the Ministry of Agriculture can impose a fine. The firm may appeal to court but, in most cases, prefers the imposition of a fine to the inconvenience and publicity of a court case.

Supervision of Toxicological Aspects

Upon the transfer to it of the responsibility of supervising matters relating to pesticide hazards, the Ministry of Agriculture appointed a Poison Panel including representatives of medical and veterinary sciences, agriculture and gardening organizations, and the chemical trade. No pesticide may be sold unless it has been classified and its label and packing have been approved by the Panel. Approved labels contain directions for use, and possibly indications of first aid methods and/or medical supervision of persons working constantly with poisons. All pesticides must be sold in unbroken packages only, except in the case of certain bulk chemicals, but it is no longer incumbent on retailers to keep poison books and to file poison requisition forms.

Four classes are established for dangerous pesticides: Class X, including cyanide and two other chemicals, to be sold and used only by licensed persons and requiring requisition forms; Classes A (e. g. parathion) and B (e. g. lead arsenate) to be sold only by retailers who have registered with the police; and Class C, including pesticides which are fairly harmless when used in an ordinary way, but still, for example, labelled "CAUTION" etc. Manufacturers and dealers must keep pesticides of the first three classes in locked rooms marked "POISON".

The Poison Panel will gather available information on toxicity of pesticides and residual effects. It may supplement such information by researches, for example, on the effect of pesticides on nutrients.

All expenses in connection with the Poison Panel are defrayed by the State. However, when new pesticides require special research, the proprietor may be asked to cover a part of the costs.

Responsibilities of Buyers and Users

The new regulations reduce the number of requisition forms practically to nil for the convenience of buyers and retailers, but their responsibilities as to safe storage and uses are stressed. Pesticides must always be stored in the original packings, and poisons must be kept in a special room or locker. If protective clothing or any other safety measure is prescribed on the label, the employer must provide his employees with it. Persons suffering from oversensibility to poisons, disposed to fainting, or of low I. Q. must not be employed on work with poisons. Empty containers and unused portions must be disposed of with special care, having regard to the danger to children and livestock. Care must be taken not to pollute water supplies.

It is an employee's duty to prevent children or other unauthorized persons from

having access to poisons, remains of sprays, or empty containers. He must use the protective clothing placed at his disposal and stop work when he feels signs of poisoning, until he can be examined medically and remedies can be applied.

Protection of Bees

Persons who cause death of bees by spraying plants in open blossom are liable to indemnity suits. Apart from the usual skull and cross-bones sign obligatory for poisons of classes X, A, and B, two special signs, showing a bee, are prescribed for the following:

1. Pesticides which are very dangerous to bees and which must not be used on flowering plants except in very special cases, such as phosphate esters, arsenates and dinitrocresol.
2. Pesticides dangerous to bees, such as DDT and hormone-type weedkillers, which may be used on flowering cruciferous crops and on weeds in flower, provided treatment is carried out between 7 p. m. and 6 a. m. and provided the flowers are closed.

The ideal stated by a Danish legislator 700 years ago – " The law shall be plain so that every man can know and understand what is written in the law " – may be more difficult to achieve in the case of pesticides, a complicated matter not applicable to those distant days. Nevertheless, it is hoped that the new regulations will effect simplification and promote co-operation among all concerned.

Gall Midges Infesting Grain Sorghums and Grasses in Nigeria

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RECENTLY, Geering[1] and Bowden[2] reported the presence of *Contarinia sorghicola* Coq. in cultivated sorghums in Uganda and the Gold Coast respectively. Geering also found an Eulophid parasite, *Tetrastichus* sp., associated with *C. sorghicola*.

In March 1953, several hundred specimens of *Contarinia sorghicola* were reared from a few heads of volunteer *Sorghum vulgare* collected near Ibadan, Western Region, Nigeria. A preliminary survey of the distribution of gall midges attacking the seedheads of grain sorghums and related wild grasses throughout Nigeria, as a part of the research program of the Nigeria Department of Agriculture, was carried out from July to December of that year. Specimens were collected of 12 species or varieties of plants from 37 stations throughout the Territory during this period and gall midges reared from 9 host species and varieties originating in 17 widely distributed stations.

At least four species of gall midges, belonging to the Tribes Cecidomyiariae and Lasiopterariae were found to be present. Their host distribution is summarized in Table 1.

The other undetermined species referred to in Table 1 include: a Bifila gall midge from *Sorghum guineense* and *S. arundinaceum*; a Bifila very similar to *Contarinia sorghicola*, a second dissimilar one and a Trifila from *Panicum maximum*; a further Bifila from *Andropogon gayanus*; and inquiline Clinodiplosine species from *S. saccharatum*; and one or more predaceous species, probably of the genus *Lestodiplosis*, from *S. caudatum*, *S. guineense*, *S. arundinaceum* and *Pennisetum pedicellatum*.

An Eulophid parasite, *Tetrastichus* sp., believed to be identical with that reported from Uganda by Geering, was reared in association with *Contarinia sorghicola* from all the grain sorghums examined except *Sorghum caudatum*, and from the grasses *S. arundinaceum* and *Andropogon gayanus*. Other parasites have been found to be associated with these species but have not yet been identified.

A full report of the results of this preliminary survey will be published elsewhere in due course.

I am indebted to the Provincial Agricultural Officers at Maiduguri, Gusau, Zaria and Yandev for providing named plant material, to Dr. H. F. Barnes and Mr. G. J. Kerrich for identifying the gall midges and the parasites, respectively, and to Dr. W. J. Hall, Director of the Commonwealth Institute of Entomology for making arrangements for these identifications.

[1] Geering, Q. A. 1953. The sorghum midge, *Contarinia sorghicola* (Coq.) in East Africa. Bull. Ent. Res. 44 : 363-366.

[2] Bowden, J. 1953. Sorghum midge and resistant varieties in the Gold Coast. Nature 172 : 551.

TABLE 1. – *Host plant distribution of Gall midges in Nigeria, showing numbers of localities from which reared specimens originated*

Host plant	Cecidomyiariae		Lasiopterariae		Other undetermined species
	Contarinia sorghicola	*Stenodiplosis* spp.	sp.A	sp.B	
Sorghum vulgare	3				
» var. *durra*	2				
» var. *saccharatum*	1				1
» var. *caudatum*	1				1
» var. *guineense*	6	3			1
Sorghum arundinaceum	6	4	1		5
Andropogon gayanus	1				1
Panicum maximum		3	4		2
Pennisetum pedicellatum				1	2
Total number of localities	20	10	5	1	13

Occurrence of Bushy Stunt of Tomato in Italy

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A virus disease of tomato, the manifestations of which were particularly evident on the top half of the affected plants, was observed towards the end of the summer of 1954, in the Maccarese region, province of Rome. The diseased plants were stunted and feeble, with the top growth clustered into a bushy formation. The leaves near the top were conspicuously distorted and deformed, with leaflets often cupped upward (Figure 1). The lower leaves were hanging down and often showed a characteristic purplish–blue coloration. In the late stage of the disease, leaves began to wither, from the bottom towards the top, until the plant died.

The diseased plants produced very few fruits, owing to the heavy fall of flowers and young fruits. The fruit remaining on the plant was reduced in size, and was of

Figure 1. Apical growth of a tomato plant showing infection of the bushy stunt.

paler color at ripening than that of normal fruit, and it had an insipid flavor.

Microscopic examination of the deformed leaflets showed that the two halves of unequal development differed in histological structure. In the more developed half, the palisade tissue was normal and the spongy tissue had wide intercellular spaces. The underdeveloped half was thinner, owing to the reduced lengthwise growth of the palisade cells and to the extreme reduction and often the complete lack of intercellular spaces in the spongy tissue. No intracellular inclusions or X bodies have been identified.

The disease was transmitted to healthy tomato plants by rubbing the leaves with sap from the diseased plants. In addition to tomato, four other species were mechanically infected, in order to identify the causal virus: pepper (*Capsicum frutescens*), tobacco (*Nicotiana tabacum*), *N. glutinosa* and *Vigna sinensis*.

A week after inoculation, yellowish local lesions with brown centers were seen on the inoculated pepper leaves, and those lesions later spread and became necrotic spots, encircled by a darker border. After a month, the infection spread throughout the whole plants and symptoms appeared also on the leaves which were not inoculated. The other three species inoculated showed only local lesions which were not followed by systemic infections.

Attempts to transmit the disease through seeds or soil were unsuccessful. Seeds from diseased plants and from healthy plants planted in soil in which infected tomato plants had been grown always produced healthy plants.

From the symptoms observed on the tomato plants and from the reactions of the other four species inoculated, it may be concluded that the disease seen in the Maccarese district was bushy stunt, caused by *Lycopersicum* virus 4 Smith or *Marmor dodecahedron* Holmes.

This disease had been recorded previously only in the British Isles.

Outbreaks and New Records

Kenya

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Aceria sheldoni: a First Record

The citrus bud mite, *Aceria sheldoni* (Ewing), has recently been found to be widespread. It is thought to have been introduced fairly recently, although it may have been present, but undetected, for many years.

The mite is a pest of *Citrus* in California, and Keifer [1] states that " Very similar or identical populations damage *Citrus* in such places as Hawaii, Australia, Java ". The States of Australia affected are New South Wales and Queensland. More recently, the mite has been recorded from Turkey, Argentina (Buenos Aires), Italy, Sicily and Tanganyika. The literature also includes a record for South Africa, but the source of this has not been traced.

[1] Keifer, H. H. 1946. A review of North American economic Eriophyid mites. Jour. Econ. Ent. 39: 563–570. 1946 (see p. 566).

Tanganyika

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Eldana saccharina: a First Record

The Pyralid stalk borer, *Eldana saccharina* Wlk., is reported to have caused severe damage to both mature and young sugar-cane on a small estate near Arusha. This is the first record of the species in Tanganyika. It is known as a pest of *Pennisetum*, millet and sugar-cane in Gold Coast, Nigeria, French West Africa and Zululand.

United States

Plant Pest Control Branch
Agricultural Research Service
United States Department of Agriculture

First Record of Citrus Blackfly

The first infestation of citrus blackfly, *Aleurocanthus woglumi* Ashby, known to occur in the United States was found 31 May 1955 at Brownsville in the State of Texas, when egg spirals and unemerged pupae were taken on two leaves of a single lime tree in that town. Brownsville is at the lower tip of Texas just across the Rio Grande River from Mexico. Immediately upon this discovery an intensive survey and eradication program was begun throughout the vicinity.

Spread of Vegetable and Alfalfa Weevils

The vegetable weevil, *Listroderes costirostris obliquus* Klug, which was first recorded in 1922 as being present in the United States when it was found in Mississippi, and now occurs in many states in the southern half of the country, was discovered for the first time in the States of Kentucky and Missouri during June 1955.

Also during June 1955 first records were made of the finding in the States of North Carolina and Washington of the alfalfa weevil, *Hypera postica* (Gyll.). *Hypera postica* was first recorded in the United States in 1904 when it was discovered in the State of Utah, but until 1952 it had not been recorded east of the Mississippi River.

Plant Quarantine Announcements

Greece

Ministerial Decree of 29 December 1954 prohibiting the importation and movement of goods capable of spreading phylloxera, published in the *Ephemeris tes Kuberneseos* No. 315, 31 December 1954, revises and consolidates previous regulations on this subject. The more important provisions of this new Decree concerning importation are as follows:

Imports prohibited. The introduction of the following materials into the phylloxera-free and phylloxera-suspected regions [1] of Greece is prohibited from any phylloxera-infested country as well as from phylloxera-infested or phylloxera-suspected regions in the country.

1. All varieties of grapevines, plants and parts thereof, fresh or dried, including roots, stems, branches, bark, leaves, fruit, and fragments or refuse of grapevine, but excluding raisins and grape seeds.
2. Phylloxera adults, eggs and nymphs.
3. Stakes, props, sheaves and baskets which have been used in vineyards.
4. Animal or plant manure or mixtures thereof.
5. Soil and muck-soil, and gravel and sand containing soil.
6. Madder and licorice.
7. Any green plant, such as nursery plants, cuttings, scions, roots, rhizomes, potatoes and other tubers, bulbs, branches, bark, leaves, fresh fruit and vegetables, except those specifically exempted elsewhere in this Decree.

Imports unrestricted. Unrestricted importation from any country and free movement between regions within the country is permitted in the case of the following materials, subject to any legislation in force on phytosanitary inspection:

1. Raisins, grape seeds, grape marc, grape juice and wine.
2. Fresh or dried flowers without roots and soil.
3. Any dry seeds.
4. Dried fruits, such as nuts, almonds, hazelnuts, peanuts, pine cones, chestnuts, figs, plums, dates, carob etc., if free from soil.
5. Dried medicinal plants.
6. Dried plants for tanning.
7. Dried gall nuts in general, acorns, and dried leaves for tanning.
8. Dried straw and fodder plants, dried industrial grasses in general, whether manufactured or not, such as straw, rushes, esparto grass, broomcorn and other similar materials, as well as dried leaves and flowers.
9. Lumber in general and dried woods, with or without bark.
10. Industrial agricultural products, such as preserved fruit, oil-seed cakes, olive pits and related products, with the exception of grape hull.
11. Dried or fresh aquatic plants free from soil, if a special permit has been obtained from the Ministry of Agriculture.
12. Pure sand, porcelain and other industrial soils or industrial ore, provided that in the case of industrial ore, a certificate from the General Chemistry Officer is

[1] Localities declared as phylloxera-free, phylloxera-suspected and infested regions are enumerated in Decrees of 28 March and 19 September 1935.

obtained, certifying the purity of the material.

13. Fresh fruit, such as apple and pear, without branches and leaves. It must be packed in new containers.

Potatoes. The importation of potatoes for planting and their movement in the phylloxera-free and phylloxera-suspected regions is permitted, if permission has been granted by the Ministry of Agriculture in advance.

Scions and cuttings. Scions and cuttings (except those of grapevine) may be imported from European and Mediterranean countries into the phylloxera-free regions of Greece, through the ports of Piraeus, Patras, or Heraklion in Crete, or Athens airport. Permission from the Ministry of Agriculture must be obtained in advance.

Nursery plants. Nursery trees without soil attached may be imported from European and Mediterranean countries, through the port of Piraeus or Athens airport, to the phylloxera-free regions of Greece, except Crete, Heptanesus, Thira and Peloponnesus, including the surrounding islands of Poros, Hydra, Spetsai, Kithira and Antikithira. Permission from the Ministry of Agriculture must be obtained in advance and the assignments must be accompanied by phytosanitary certificates issued by the country of origin, stating that the nursery trees meet the phytosanitary requirements and that they originate from nurseries where no grapevine is cultivated. The consignments are subject to inspection and treatment on arrival.

Bulbs, tubers, roots, rhizomes and fresh flowers. These materials may be imported under the same conditions as those for nursery plants. However, phytosanitary certificates are not required for small quantities up to 5 kg. carried by travellers or sent as gifts, nor for fresh flowers carried by travellers in small bouquets.

Grapevines. American and other kinds of grapevines may be imported from foreign countries only into the phylloxera-infested regions of Greece, after special permission has been granted by the Ministry of Agriculture in accordance with the decision of the Plant Protection Council. They are subject to inspection on arrival.

Materials for scientific purposes. All kinds of plants with or without soil attached may be imported for scientific purposes and their movement in the phylloxera-infested and phylloxera-suspected regions is also permitted provided that permission has been granted in advance by the Ministry of Agriculture in accordance with the decision of the Plant Protection Council. The imported consignments must be accompanied by phytosanitary certificates and are subject to inspection.

General provisions. Phytosanitary certificates and certificates of origin to accompany imports should be issued by the appropriate service of the country of origin and should be in the language of the country of origin and in French, or officially translated into Greek.

The imported consignments destined for phylloxera-free or phylloxera-suspected regions of Greece are subject to inspection at the port of entry by authorized officers and will be delivered to the consignee only if they meet the requirements or after treatment.

Repeal of previous Decrees. This new Decree revokes the previous Decrees dated 4 April 1927, 17 June 1935, 21 September 1946, 26 November 1947 and 9 May 1949, as well as all previous Decrees relating to the same subject.

Yugoslavia

Regulations of 30 April 1955 relating to the health control of plants for importation, transit and exportation, published in the *Sluzbeni List* No. 22, 25 May 1955, were established under the power of the Basic Act of 23 June 1954 (see *FAO Plant Prot. Bull.* 3 : 14. 1954) and came into force on 10 June 1955.

The phytosanitary control is to be exercised by the Federal Plant Protection Service and is to cover all living plants, parts of plants, fruit, soil, disease-causing organisms, living insects, organic fertilizers and packing materials.

Prohibited imports. The importation of the following living plants and parts thereof (excluding seed) intended for propagation is prohibited:

1. Ulmaceae;
2. *Castanea;*
3. *Abies;*
4. *Picea;*
5. *Pinus;*
6. *Pseudotsuga;*
7. *Tsuga;*
8. *Populus;* and also
9. Unbarked coniferous timber.

Consignments imported for scientific purposes are exempt from this prohibition, if previous consent of the Federal Plant Protection Service has been granted.

Phytosanitary certificates required. Each imported consignment must be accompanied by a certificate in French, English, German or Russian, issued by an authorized agency of the exporting country. The certificate should state that the consignment has been inspected and found to be free from all diseases and pests the introduction of which is prohibited, and also indicate the addresses of consignor and consignee, places of origin and loading, and contents, packing and weight of consignment.

For the following plant materials, the certificates should also include statements as specified below and they are subject to specific conditions described:

1. Potatoes. A statement that the consignment is free from *Synchytrium endobioticum*, *Leptinotarsa decemlineata*, *Phthorimea operculella*, *Heterodera rostochiensis* and *Spongospora subterranea* and that these diseases and pests do not occur at the place of origin nor within 10 km. The date on which the last inspection for *Heterodera rostochiensis* was effected must also be stated.
2. Planting materials and seeds. A statement that they do not originate from plants infected and districts infested by dangerous diseases and pests and that their production was supervised by the phytosanitary service of the exporting country. The consignments must be free from soil and packed in new containers.

Inspection and treatment. All consignments offered for importation are to be inspected and, if found or suspected of being infected or infested, they will be subject to treatment, destruction or refusal of entry. These restrictions, however, are not applicable to consignments destined for scientific institutes, under previous authorization of the Federal Plant Protection Service.

Transit. Consignments in transit must be accompanied by phytosanitary certificates. Railroad wagons containing plant materials must be closed and sealed. Materials transported by road must be securely packed. Consignments despatched by sea or waterway are subject to inspection at the ports of entry.

Exports. Consignments originating from districts declared as infested by dangerous diseases and pests are to be inspected at loading points and those from other districts at either loading points or frontier. Applications for inspection must state the requirements of the importing country and give descriptions of the consignments.

Points of entry and exit.

By air: Belgrade, Zagreb, Ljubljana, Sarajevo, Skoplje and Titograd.

By land or water: To be declared.

News and Notes

European Plant Protection Organisation

The fourth meeting of the Council of the European Plant Protection Organisation (EPPO) was held in Paris on 27 April 1955. All members were present except the Italian delegate, and there were observers from the OEEC, the Council of Europe and the European Committee on Agricultural Zoology. The proposed adherence of two new member Governments, Norway and Tunisia, was announced; the total membership of EPPO will then be 22. The Chairman, M. Van Orshoven (Belgium), and Vice–Chairman, M. Protin (France), whose periods of office had expired, were unanimously re-elected in those capacities for a further two years. Dr. Wilkins was reappointed Director-General for a further three years.

The Council considered a series of amendments to the EPPO Convention, designed to improve the drafting and to bring the French and English texts strictly into line, and including in some cases a revised form of presentation necessary to meet existing conditions. The amendments were approved and the revised Convention will shortly be distributed to EPPO member Governments. At the same time it was decided to alter the title of the Organisation to " The European and Mediterranean Plant Protection Organisation " but to retain the present initials EPPO.

The reports of EPPO Working Parties which met in February and March 1955, and dealt respectively with the simplification and unification of phytosanitary regulations and the San José Scale will shortly be published. One of the main recommendations of the Phytosanitary Working Party is that all governments should adopt and accept the model phytosanitary certificate included in the International Plant Protection Convention of 1951, without requiring additional declarations, except in very special circumstances.

On 6 July 1955, EPPO held an international conference at Wageningen, Holland, to consider questions relating to the control of the potato root eelworm.

It followed immediately an international symposium on plant nematodes and the diseases they cause, which was held from 30 June to 5 July 1955, under the auspices of the Netherlands Plant Protection Service.

Some progress has been made in organizing international action in the control of the muskrat. The Danish Government has provisionally promised a contribution of £. 1,000 in 1955 to the EPPO international muskrat fund to enable the German Plant Protection Service to intensify the muskrat control campaign by appointing extra trappers in the upper reaches of the Elbe, in the hope that this may remove the threat to the Danish waterways. The Belgian Government will endeavor to provide some money for EPPO in 1955 to strengthen muskrat trapping on the French side of its frontier, and will consider sympathetically a specific contribution to the international muskrat fund for this purpose in 1956. The Netherlands Government makes an annual contribution of approximately £. 2,000 to the fund, for the strengthening of the Belgian control service in areas threatening Holland. In Austria, muskrat infestation does not cause the Government concern from the economic standpoint, but Federal Germany does not welcome the muskrats which cross into its territory from Austria and neighboring countries. EPPO is accordingly convening a conference in Vienna on 19 July 1955, to which the Governments of Austria, Federal Germany, Hungary, Czechoslovakia and Yugoslavia have been invited to send representatives, when it is hoped that an arrangement may be arrived at.

This year, 1955, is the last in which EPPO will directly supervise a Colorado beetle campaign in France. The French Ministry of Agriculture assumed responsibility for the Pas-de-Calais campaign at the end of 1954, and from 1956 onwards will similarly take over responsibility for the campaign in the Cotentin peninsula. On the other hand, the spread of the Colorado beetle infestation in Schleswig-Holstein is causing concern to Denmark and Sweden, and at an EPPO conference in Hamburg on 15 April it was announced that the Swedish Government had provisionally promised a contribution of £. 1,000 to EPPO in 1955 to enable the control to be intensified in areas most threatening to the two countries.

On 15 June 1955, EPPO moved its office to La Maison du Danemark, 142, Avenue des Champs Elysées, Paris 8°.

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